Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 2A. This sheet, which includes

Fig. 2A, replaces the original sheet including Fig. 2A.

Attachment: Replacement Sheet: Fig. 2A

Applicants : Paul V. Werme *et al.*   Attorney Docket No.: Navy Case 83019
Serial No. : 09/864,829
Filed   : May 24, 2001
Page   : 12 of 18

REMARKS

The Office Action indicates that none of claims 2-37 previously added in the September 19, 2001 Preliminary Amendment is deemed allowed or allowable.

By this Amendment, Fig. 2A is replaced pursuant to the attached drawing sheet, claims 2-37 are cancelled without prejudice to or disclaimer of the subject matter contained therein, the specification is amended, and claims 38-72 are added to recite features supported in the substitute specification at, for example, page 9, line 16 – page 10, line 2; page 23, line 24 – page 24, lines 8 and 28 – page 25, line 22; page 28, line 28 – page 29, line 9; page 33, line 1 – page 34, line 16; page 36, lines 7-11; page 37, lines 12-28; page 38, line 26 – page 40, line 6; page 45, lines 10-14; page 52, lines 20-26 and page 56, lines 1-11 (corresponding respectively to paragraphs [0035], [0129], [0132] – [0134], [0182], [0230] – [0237], [0248], [0252], [0255] – [0257], [0271], [0316] and [0359] of U.S. Patent Application Publication 2005/0055350) and Figs. 1A-2B and 13A-14. Accordingly, claims 38-72 are pending in this application. No new matter is added by any of these amendments.

Reconsideration based on the following remarks is respectfully requested.

I.   Amendment Entry with Request for Continued Examination

Entry of this amendment is proper under 37 CFR §1.114 because this Submission is filed in conjunction with a Request for Continued Examination as attached with authorization to charge the associated fees under 37 CFR §1.17(e) for Fee Code 1801.

II.   Non-necessity of Additional Claim Fees

Applicants previously paid for three (3) independent claims and thirty-seven (37) total claims, all of which are cancelled. This Amendment adds three (3) independent claims and thirty-five (35) total claims, neither of which is greater than the numbers of claims previously paid for. Thus, no claim fees are required under 37 CFR §1.16(h) for independent excess Fee Code 1201 or under 37 CFR §1.16(i) for total excess Fee Code 1202.

III.   Amendments to the Specification and the Drawings

The substitute specification filed September 19, 2001 at page 8, line 4 – page 9, line 5 and page 76, lines 1-6 is amended to correct minor inconsistencies. This portion corresponds to

paragraphs [0033] and [0455] of U.S. Patent Application Publication 2005/0055350. The substitute drawings also filed September 19, 2001 are corrected to replace an identification label "FG43" in Fig. 2A for the Resource Manager with --FG42-- to be consistent with the specification and Fig. 14. No new matter is added by these amendments.

IV.   Anticipatory Rejection under 35 U.S.C. §102

The Office Action rejects claims 2-4, 6, 7, 12, 17, 19-22, 24, 25, 30, 35 and 37 as being allegedly anticipated under 35 U.S.C. §102(a) over "A Resource Description Environment for Distributed Systems", by M. Brune *et al.*, IEEE, *Proc. of 8th International Symposium on High Performance Distributed Computing* (HPDC-8), 1999, pp. 279-286 (hereinafter "Brune"). See http://www.zib.de/reinefeld/bib/99hpdc.pdf. This rejection is rendered moot by the cancellation of claims 2-4, 6, 7, 12, 19-22, 24, 25, 30, 35 and 37. The September 22, 2005 response to the June 24, 2005 Office Action also addressed substantially this rejection, but the previous arguments were not deemed persuasive.

A. Claim Language: Applicants' claims are directed generally, for example, to a method for distributing application, system and network specification information to a resource allocation function that controls an N-plurality of hosts in a distributed environment, each host instantiating up to M managed characteristic applications, the resource allocation function communicating with an application control function. For example, Applicants' independent claim 38 recites, *inter alia*, "providing instrumentation information to the resource allocation function, the instrumentation information being associated with the N-plurality of hosts; preparing system specification files to describe system and network specification information; linking the system specification files to the characteristic applications; producing quality-of-service (QoS) information by the resource allocation function based on the instrumentation information, the QoS information being associated with the characteristic applications on the N-plurality of hosts; allocating assigned hosts for processing the characteristic applications as control orders by the resource allocation function based on the QoS information, the assigned hosts being among the N-plurality of hosts; and compiling commands for the respective characteristic applications by the application control function to the assigned hosts based on the control orders and the QoS information." Related features are recited in independent claim 52.

Applicants respectfully submit that Brune does not describe or suggest at least these method processes.

Specifically, the network (100) connects hosts A-N with a management system (RM) for executing up to M characteristic applications or programs. The resource allocation function (FG4) includes a hardware broker (50 / FG40) for analyzing load, a resource manager (60 / FG42) and QoS managers (30 / FG44). A system specification library (FG34) having access to system specification files (FG32) links with the applications. See *e.g.*, Figs. 1A and 2A. The application control function (FG5) includes control displays (80 / FG54) and a program controller (70 / FG50) connected to the resource manager. Instrumentation (FG2) provides collectors (10 / FG24), correlators (20 / FG26) and a QoS monitor (FG29) to provide information to the QoS managers. History servers (40 / FG12) in a monitoring function (FG1) provide performance metrics of the hosts to the hardware broker. See *e.g.*, Figs. 1A and 2B.

Applicants' claims are directed generally, for example, to a process control system controlling an N-plurality of hosts in a distributed environment, each host instantiating up to M managed characteristic applications. For example, independent claim 59 recites, *inter alia*, "a plurality of quality-of-service (QoS) managers corresponding to the N-plurality of hosts, the QoS managers receiving instrumentation information from the respective hosts and producing QoS information based on the instrumentation information, the instrumentation information being associated with the N-plurality of hosts, the QoS information being associated with the characteristic applications on the N-plurality of hosts; a library that links system specification files that describe system and network specification information, the library linking the specification files to the characteristic applications; a resource manager that allocates assigned hosts for processing the characteristic applications as control orders based on the QoS information, the assigned hosts being among the N-plurality of hosts; and a program controller that compiles commands for the respective characteristic applications to the assigned hosts based on the control orders and the QoS information." Applicants respectfully submit that Brune does not describe or suggest at least these system features, as described *supra*.

B. Brune Teachings: Instead, Brune discloses a description software architecture that specifies, registers, requests and accesses computer resources. In particular, Brune teaches Resource Service Description (RSD) management providing connection tools between end-users,

such as GUI and language interfaces and an object library. See, *e.g.*, §3 and Fig. 1 of Brune.

Also, Brune teaches specification language described by keywords for object classes, such as

NODE (process), PORT (switch) and EDGE (connection). Brune further teaches parsing by

phrase splitting into tokens, syntax checking and verifying nesting structures. See, *e.g.*, §§4.1

and 4.3 of Brune. In addition, Brune teaches analyzing internal data structures using an object

library having managers for parsing syntax, updating dynamic data, transmitting communications

and maintaining objects. An API layer interfaces with manager calls to the user. Member

functions implement traversing schemes for navigating between objects. Brune teaches

retrieving network performance data for data updating with which to calculate and communicate

availability of system resources without any implementation detail. See, *e.g.*, §§6.1-6.4 and Fig.

7 of Brune.

     C. Contrast: However, Brune does not appear to teach or suggest linkage of system

specification files to characteristic applications; production of QoS information associated with

the characteristic applications; assignment of hosts to process the characteristic applications as

control orders based on the QoS information; and compilation of commands for the characteristic

applications, as provided in Applicants' features in independent claims 38, 52 and 59. These

arguments also apply to claims 39-51 based on their dependence from claim 38, claims 53-58

based on their dependence from claim 52 and also in claims 60-70 based on their dependence

from claim 59.

     Additionally, Brune states "We did not use lex and yacc because... [of] difficulties with

nested for and if clauses...", in contrast to dependent claims 43 and 65 that explicitly recite

these tool programs for parsing and lexical analysis. Compare, *e.g.*, page 28, line 28 – page 29,

line 9 (paragraph [0182]) with of §3 (last paragraph) of Brune. Moreover, Brune does not appear

to teach or suggest assigning fitness scores by a hardware broker based on operational statuses to

a hardware broker from history servers to determine loads as provided in claims 48 and 58.

Further, Brune does not appear to teach or suggest copying characteristic applications for an

additional host among the N-plurality of host, as provided in claims 44, 57 and 71. Also, Brune

does not appear to teach or suggest the hardware broker receiving respective operational statuses

of the hosts from history servers and assigning fitness scores associated with the operational

statuses to thereby determine the loads for the resource manager as provided in claims 48, 56,

and 63. For at least these reasons, Applicants respectfully assert that claims 38-72 are patentable over the applied reference. Applicants respectfully request that the rejection under 35 U.S.C. §102 be withdrawn.

V.   Obviousness Rejections under 35 U.S.C. §103

The Final Office Action rejects claims 5, 8, 23 and 26 as being allegedly obvious under 35 U.S.C. §103(a) over Brune in view of B. Jennings *et al.*, "FIPA-Compliant Agents for Real-Time Control of Intelligent Network Traffic", Elsevier Science B.V., 1999, *Computer Networks* **31**, pp. 2017-2036 (hereinafter "Jennings"). See http://citeseer.ist.psu.edu/cache/papers/cs/ 25889/http:zSzzSzcasbah.ee.ic.ac.ukzSz~kvprouzSzFIPA-compliant_agents_for_real-time_control_of_Intelligent_Network_Traffic.pdf/fipa-compliant-agents-for.pdf. The Final Office Action further rejects claims 9 and 27 as being allegedly obvious under 35 U.S.C. §103(a) over Brune in view of U.S. Patent 6,578,005 to Lesaint *et al.* (hereinafter "Lesaint"). The Final Office Action further rejects claims 10, 11, 15, 16, 18, 28, 29, 33, 34 and 36 as being allegedly obvious under 35 U.S.C. §103(a) over Brune in view of K. Czajkowski *et al.* "A Resource Management Architecture for Metacomputing Systems", *Proc. of 4th IPPS/SPDP Workshop on Job Scheduling Strategies for Parallel Processing*, 1998 (hereinafter "Czajkowski"). See ftp://ftp.globus.org/pub/globus/papers/gram97.pdf. The Final Office Action further rejects claims 13, 14, 31 and 32 as being allegedly obvious under 35 U.S.C. §103(a) over Brune. These rejections are rendered moot by the cancellation of claims 5, 8-11, 13-16, 18, 23, 26-29, 31-34 and 36.

Jennings fails to compensate for the deficiencies of Brune. Instead, Jennings teaches network load control based on Foundation for Intelligent Agents (FIPA) standards. In particular, Jennings discloses FIPA-compliant strategies for message specification §4.1, clock synchronization §4.2 establishing operation protocols §5.1.2, message communication §5.1.3 and inter-operability §5.3. Real-time task distribution includes alternate protocols support, fault tolerance, QoS framework, scheduling agents and resource management. See, *e.g.*, §§5.3.1.1, 5.3.2.1, 5.3.2.2, 5.3.3.1 and 5.3.3.3 of Jennings. However, Jennings presents few specifics and provides no teachings for the features described in §IV.A at pages 13-14. Thus, even assuming that motivation for an artisan of ordinary skill could have been established at the time of the invention to combine the resource and service description of Brune with the FIPA-standard

network strategies of Jennings, the combined teachings of Brune and Jennings fail to describe or suggest all of the features of claims 38-72.

Lesaint fails to compensate for the deficiencies of Brune. Instead, Lesaint teaches resource allocation for real time schedule changes. In particular, Lesaint discloses staggered optimization processes using a pre-scheduler 30, an optimizing subsystem 31 and an iterative post-optimizer 39 (for subprocesses). Lesaint further teaches saving the results in a schedule store 32 for retrieval and modification by a real time optimizer 40, which includes an allocation processor 47 and an instruction generator 48. See, *e.g.*, col. 10, lines 38-45, 58-66; col. 11, lines 23-29 and Figs. 3-4 of Lesaint. Also, Lesaint teaches scheduling tasks for a technician with the pre-scheduler 30, including priority sorting at step 51, assigning the task at step 56, and backtracking to another technician at step 511. See, *e.g.*, col. 12, lines 50-56; col. 13, line 44 – col. 14, line 18 and Fig. 5 of Lesaint. However, there is no teaching or suggestion in Lesaint for the features described in §IV.A at pages 13-14. Thus, even assuming that motivation for an artisan of ordinary skill could have been established at the time of the invention to combine the resource and service description of Brune with the scheduling and optimizing processes of Lesaint, the combined teachings of Brune and Lesaint fail to describe or suggest all of the features of claims 38-72.

Czajkowski fails to compensate for the deficiencies of Brune. Instead, Czajkowski discloses management for locating and allocating computational resources. In particular, Czajkowski compares batch scheduling and wide-area scheduling. See, *e.g.*, §§2.1 and 2.2 of Czajkowski.   Further, Czajkowski teaches local resource management using Globus to submit and cancel jobs, as well as resource brokering and co-allocation. See, *e.g.*, §§5-7 of Czajkowski. However, there Czajkowski appears to lack any teaching or suggestion for the specific features described in §IV.A at pages 13-14. Thus, even assuming that motivation for an artisan of ordinary skill could have been established at the time of the invention to combine the resource and service description of Brune with the wide-area scheduling of Czajkowski, the combined teachings of Brune and Czajkowski fail to describe or suggest all of the features of claims 38-72.

A *prima facie* case of obviousness for a §103 rejection requires satisfaction of, *inter alia*, that the references must teach or suggest all the claim limitations. See MPEP §706.02(j).

Applicants submit that the Final Office Action fails to satisfy these requirements with Brune, Jennings, Lesaint and Czajkowski.

For at least these reasons, Applicants respectfully assert that the independent claims are patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed, as well as for the additional features they recite. Consequently, all the claims are in condition for allowance. Thus, Applicants respectfully request that the rejections under 35 U.S.C. §103 be withdrawn.

VI.   Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,
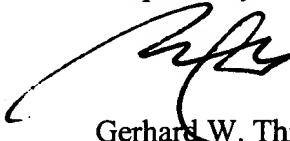
Gerhard W. Thielman
Registration No. 43,186

Attachments:
    Request for Continued Examination
    Replacement Drawing Sheet (Fig. 2A)

Date: March 6, 2006

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